

Response to Radio Spectrum Management Review

by Crown Castle UK Ltd

INTRODUCTION & SUMMARY

Crown Castle International is the world's leading wireless infrastructure provider. In the UK, Crown Castle UK Ltd operates from a portfolio of over 6,400 transmitter sites, providing transmission networks and services for national broadcasting and mobile telephone and data telecommunications. Crown Castle's networks reach more than 99.4% of the population, and we provide services for the BBC and ITV Digital, and for all the major mobile operators, including One2One, BT Cellnet, Vodafone and Orange.

Crown Castle welcomes the opportunity to respond to this Radio Spectrum Management Review. Our response focuses on the following main areas:

Economic Gains from More Efficient Use of Spectrum: We support the introduction of a single regulator with responsibilities for all spectrum management, supported by a cross-functional team of advisers, and with the authority to delegate certain spectrum management functions.

Regulatory Framework for Spectrum Management: On the international front, Crown Castle believes that co-operation in radio frequency planning is essential to avoid interference and to enable UK manufacturers to achieve economies of scale across larger markets. However, we also believe that there must be the right balance between mandating technical standards and allowing the organic development of both spectrum management and technological advances. Thus, in terms of a national dimension, Crown Castle supports the establishment of 'Spectrum Managers' with devolved powers to oversee certain functions of spectrum management and development.

Issues in Non-Marketed Uses of Spectrum: Crown Castle supports the development of more efficient uses of spectrum. In particular, we ourselves have developed proposals for a comprehensive spectrum plan to facilitate the switchover of broadcast TV services from analogue to digital. This plan is built on evolutionary stages, including the introduction of a new data to the home ("D2H") service and leading to the convergence of broadcast and telecomms delivery services into inter-working networks.

Spectrum Trading: Crown Castle supports the UK Government's commitment to develop further its market-based approach by introducing spectrum trading, once the requisite changes to EC law have been made. We believe that this will encourage innovation. However, some controls will be desirable to ensure an adequate degree of inter-operability between equipments and services.

DETAILED RESPONSE

ECONOMIC GAINS FROM EFFICIENT USE OF SPECTRUM

Crown Castle perceives radio spectrum as essential raw material for the UK's economy of the future. It will be essential to balance the benefits of spectrum use with the allocation and assignment of specific spectrum access, and to monitor continuously the effectiveness and efficiency of spectrum management.

i. How Best Can Government assess the economic gains from enabling more efficient use to be made of spectrum?

Release of spectrum to innovative technology platforms has been hindered by overlaps in existing licensing jurisdictions. Crown Castle supports the introduction of one regulator with responsibility for all spectrum management, to assist in the development of innovative spectrum uses. This in turn will allow new technology platforms to be developed ensuring market focussed technology development, speed to market and a culture of innovation.

New methods of assessing spectrum efficiency and economic gains will be required. These are very complex issues and Crown Castle suggests that these should be the subjects of new studies commissioned as part of the Spectrum Management Review. In the case of spectrum efficiency, simplistic measures such as Mbit/s per MHz of spectrum per customer served are not adequate to apply across different platforms such as broadcasting and mobile telecomms, because it is necessary to consider the content being conveyed. If all users want the same information such as national news then broadcasting uses the spectrum most efficiently, but if each user want a separate conversation then cellular mobile systems use the spectrum most efficiently. The assessment of net economic gain to the UK is also far from trivial, but such studies would help to support recommendations made by the Spectrum Management Review.

ECONOMIC PRINCIPLES OF SPECTRUM MANAGEMENT

iii. How far can the over-arching principle, that spectrum users should bear the opportunity cost of their usage, be applied in practice?

Crown Castle believes that in a free market the over-arching principle, that spectrum owners should bear the opportunity cost of their spectrum usage, is not unreasonable. However, some modifying factors need to be applied in some applications within the context of overall benefits to UK plc, as outlined in the Radio Spectrum Management Review.

LEGISLATIVE BASIS FOR SPECTRUM MANAGEMENT

- v. *To what extent would a separate spectrum management duty for Ofcom be helpful, and how could this best be articulated in a new statutory framework for communications regulation?*

Crown Castle believes that a separate spectrum management duty for Ofcom is essential and that it should be supported by a cross-functional team of industry and interest group advisers, representing all areas of licensing spectrum activity. Crown Castle recommends that Ofcom should devolve and standardise the service planning and regulatory aspects of this duty, wherever possible, with the aim to engender a rapid speed to market for new telecomms and broadcast services.

REGULATORY FRAMEWORK FOR SPECTRUM MANAGEMENT

Crown Castle believes that International co-operation in radio frequency planning is essential to avoid harmful interference, and to enable manufacturers to achieve economies of scale in the production of equipment across larger markets. Within Europe there is huge interest in developing new uses for the spectrum – the UK Government needs to be following this process, and working towards internationally agreed developments. Within Europe as well as UK, there is significant competition between broadcast and telecoms uses of the spectrum. The effort and money spent in supporting this could be put to better use by developing a strategy for the interworking of these platforms.

- viii. *How can the UK's stance towards international spectrum management policy best reflect the opportunity costs of different spectrum uses?*

All the potential uses of the UK spectrum within the next 5-10 years are unlikely to have been yet identified. Therefore it is essential that the UK maintains maximum flexibility in its use of the available spectrum and does not align itself with any particular technology or service. One of the more flexible ways forward is to create managed spectrum and service 'islands'. This would involve the specification of test points and protection ratios for the various systems used – Broadcast or Telecommunications, and maximum protected field strengths at regional and national boundaries, tied into a formal framework. Such a framework would allow administrations freedom to develop the spectrum for whatever purpose they liked, in the knowledge that any adjoining countries would not put into an area more than a specified level of interference. Additional flexibility could be introduced by allowing bilateral negotiations between administrations, on an 'as needed' basis.

- ix. *What scope is there for greater autonomy in domestic spectrum policy within the constraints imposed by the UK's international commitments?*

Within the existing ITU harmonisation procedures, the UK has the right to negotiate what its particular requirements are but needs to consider the impact of a neighbouring country making the same unilateral decision. Within the broadcast spectrum, the mechanism of bi-lateral agreements has worked well for successful compatibility. For an island nation such as the UK, this method may offer the greatest benefits.

- x. How should the UK Government judge the trade-off between a more liberal approach to spectrum management and one in which technology standards and spectrum access are mandated as part of a strategic industrial and trade policy?*

Crown Castle believes that there must be the right balance between mandating technical standards and allowing the organic development of both spectrum management and technological advances. A mandated strategy within the UK/Europe (like GSM) can provide significant commercial and social advantages, compared with the alternative approach taken in the US. These decisions must be part of a co-ordinated European strategy for spectrum management, regulated by Ofcom in the UK.

REGULATORY FRAMEWORK - NATIONAL DIMENSION

In the UK the RA plays the leading role in managing the allocation of spectrum for individual assignments, and leads our representation in international spectrum management fora. This role requires good lines of communication and a coherent driving force.

- xii. Within the current and proposed statutory framework, what improvements (if any) could be made to the institutional arrangements for spectrum management in the UK?*

Crown Castle supports the creation of a single spectrum management function within Ofcom (see also v above), which would take responsibility for the management of all spectrum segments. It would have the authority to delegate certain spectrum management functions and to establish 'Spectrum Managers' with devolved powers. The Spectrum Managers would be competent experts or organisations who would also be responsible for encouraging new uses for spectrum, in a fair and equitable manner. A good example of a Spectrum Manager is the Joint Frequency Management Group who presently license and 'housekeep' programme making and Special Events activities on behalf of the Secretary of State.

ISSUES IN NON-MARKETED USES OF SPECTRUM

Broadcasting

The switchover of broadcast TV services from analogue to digital will provide the opportunity for major new efficiencies in spectrum management. Crown Castle has identified methods of facilitating switchover and releasing spectrum for the introduction of additional services which use spectrum very efficiently. One example is our "D2H" (Data to the Home) proposal which would offer broadband data services to fixed users, thus supporting the Government's Broadband Britain objective. D2H uses broadcast spectrum in a way that could not practicably accommodate broadcast or mobile services, so it is a good way of increasing the efficiency of spectrum utilisation. However it is also an illustration of the need to manage spectrum in a way that facilitates innovative services, whilst retaining a balanced approach with regard to the licensees of other spectrum.

xx. *Is this a valid description of the factors affecting use of radio spectrum by the broadcasting sector?*

Crown Castle agrees with the Review's description of factors affecting the use of broadcast radio spectrum.

xxi. *How can the Government's commitment to value the spectrum used by broadcasters be implemented in a way that encourages spectrum efficiency?*

Crown Castle believes that an important new dimension is emerging that could lead to more efficient use of spectrum and lower cost to the consumer. Many of the services presently envisaged for next generation telecommunication services could be delivered more efficiently if they are operated in cooperation with broadcast services. These concepts are being developed by the Digital Video Broadcasting (DVB) organisation, the UMTS Forum and a recently approved DTI LINK project called COMBINE (which was submitted by the Mobile Virtual Centre of Excellence). Crown Castle is active in all these areas.

Future spectrum management proposals need to take account of these developments in order to optimise future use of spectrum.

SPECTRUM PRICING AND AUCTIONS

Crown Castle agrees with the "underlying premise of spectrum pricing". However in order to encourage the adoption of new technological ideas that use spectrum more efficiently and generate value, we suggest that the fee should be recovered in a way that does not unduly burden the operator prior to the development of the service (e.g. through charging a share in the revenue stream, rather than an up-front bulk payment).

xxx. *How far have economic incentives from spectrum prices helped to encourage efficient spectrum use?*

To date it is unclear how effective this approach has been but Crown Castle considers that this approach fosters an environment that develops more effective technology platforms in a suitable timescale to support efficient spectrum utilisation. Furthermore, it seems clear that this approach is likely to generate ongoing revenue streams directly linked to market demand thus highlighting commercially successful platforms and removing unsuccessful platforms allowing spectrum to be recycled for the benefit of all.

It should be noted that considerable innovation is also taking place to achieve efficient utilisation of IMS spectrum. In a sense these systems carry out spectrum management in real time through the use of "polite" protocols. Although this is a significant advance it does not alter Crown Castle's view with regard to economic incentives.

xxxi. *Where should the balance lie between administratively set incentive prices and competitive auction of spectrum licences? To what extent could the two approaches be combined to encourage spectrum efficiency?*

Crown Castle suggests that administrative pricing could be used as a precursor to auctions to ensure that the competing bodies are able to fully exploit the spectrum rights purchased. However, we recommend that an over-riding principle of using revenue- or timescale- based license fees is considered.

SPECTRUM TRADING

Spectrum trading is an obvious extension to spectrum auctions, but a clear and effective framework is required within which trading could take place. Crown Castle notes that the Government has committed to develop further its market-based approach by introducing spectrum trading, once the requisite changes to EC law have been made. Spectrum trading may also be considered a natural market development of excess capacity leasing, as done presently in the telecomms marketplace by MVNO's. Such trading could provide more opportunities for competition in terms of total infra-structure outsourcing, where a licensee would allow a third party to build, operate, and take total responsibility for the complete network on his behalf.

Spectrum trading may allow an improvement in the quality of services to rural and less well-developed areas. Third party operators could lease spectrum from national/regional licensees whose business plans do not provide for services in low population areas.

Spectrum trading could encourage spectrum efficiency without the need for additional regulatory measures. There is likely to be a compelling commercial incentive to lease all available spectrum to third parties.

xxxiii. Which areas of spectrum use are most amenable to, and which areas offer the greatest potential efficiency gains from, the introduction of spectrum trading?

Broadband Fixed Wireless Access offers the potential for the development of many new 'last mile' services and the efficient use of new (microwave frequency) spectrum, but operators throughout the world seem to be experiencing difficulty in developing and implementing robust business plans. Crown Castle believes that the flexibility offered by spectrum trading would be helpful in establishing this new area of business. It would encourage efficient spectrum usage and given the lack of a mature incumbent industry, it would be relatively amenable to the introduction of spectrum trading.

xxxiv. To what extent would a move to licensing of spectrum access, as opposed to wireless apparatus licensing as now, facilitate spectrum trading?

The licensing of spectrum access does encourage innovation, but the freedom of operators to choose from a number of technologies can cause consumer confusion and antagonism, which might ultimately reduce creation of wealth for the country (e.g. multiple mobile phone standards in the US resulting in lack of good roaming facilities and low customer take-up compared with Europe). Crown Castle believes that Spectrum trading would tend to encourage innovation, which is fundamentally good, but some control would be desirable to ensure an appropriate degree of interoperability.